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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,232	10/16/2001	Mikio Matsuda	03-010	3656

23400 7590 11/14/2003
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RESTON, VA 20190

EXAMINER

LOPEZ, FRANK D

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 11/14/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,232

Applicant(s)

MATSUDA ET AL.

Examiner

F. Daniel Lopez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 12-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) g.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

Applicant's arguments filed August 28, 2003, have been fully considered but they are not deemed to be persuasive.

Applicant's arguments with respect to claims 12-18 have been considered but are deemed to be moot in view of the new grounds of rejection.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

Claims 12-18, inasmuch as they are definite, are rejected under 35 U.S.C. § 103 as being unpatentable over Abousabha et al in view of Terauchi and Van Nostrand's Scientific Encyclopedia. Abousabha et al discloses a variable displacement fluid pump comprising a piston (26) reciprocating in a cylinder bore (28) in a housing; an orbiting member (62) integrally rotating with a shaft (36), rotatably supported in the housing and a generally keyed (162) cylindrical constraining member, and including a slant plane slanting with respect to the shaft at a changeable angle; a ring disc type swing member (24) connected to the slant plane through a thrust bearing (98), and swinging with rotation of the orbiting member to reciprocate the piston; a constant velocity type swing support mechanism (64) including the constraining member (22) axially movable along a centerline in the housing and constraining a second ring member (66) from rotating about the centerline, but allowing the second ring member to rotate about first and second axes, each perpendicular to the centerline and crossing over each other; with the swing member connected to the first rotatable member; wherein there is a displacement capacity sensor (143) detecting the capacity based on an amount of displacement of the constraining member in a similarly shaped hole in the housing; wherein the displacement of the pump is adjusted by a motor (138) adjusting an axial position of the constraining member; but does not disclose that the swing support member includes a first ring having first and second pairs of holes, on first and second

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axis, respectively, perpendicular to each other; the second ring member having a third pair of holes on the second axis; wherein the first pins pass through a hole in the constraining member and the first pair of holes, to support the first ring on and surrounding the constraining member; second pins passing through the second holes and third holes, to support the ring member on the first member; or that the constraining member has either a polygonal or a gear cross section and is inserted into the corresponding shaped hole in the housing.

Terauchi teaches, for a fluid pump comprising a piston reciprocating in a cylinder bore in a housing; an orbiting member (25) integrally rotating with a shaft (20), rotatably supported in the housing, and including a slant plane slanting with respect to the shaft; a ring disc type swing member (27) connected to the slant plane through a thrust bearing (28), and swinging with rotation of the orbiting member to reciprocate the piston; the equivalence of a constant velocity type swing support mechanism including a generally cylindrical constraining member (50, fig 7) axially movable along a centerline in the housing and constraining a first rotatable member (53) from rotating about the centerline, but allowing the first rotatable member to rotate about first and second axes, each perpendicular to the centerline and crossing over each other; with the swing member connected to the first rotatable member; that the shaft is supported by the housing without being supported by the constraining member; and a swing support member including a constraining member (31) constrains a first rotatable member (34) from rotating about the centerline by a pin (shown on end in fig 1) engaged in holes formed in the first rotating member and the constraining member (hole in constraining member is 312 a, 312b), and allowing it to rotate about the first axis; with a second rotatable member (35) connected to the first rotatable member through a pin (34a, 34b) engaged in a hole in the first rotating member, such that it rotates about a second axis, with the swing member connected to the second rotatable member.

Van Nostrand's Scientific Encyclopedia teaches, for a swing support member connected to a "constraining member" (central mass) for supporting a ring member (Outer gimbal) such that the member is allowed to swing with a variable swing angle; that the swing support member includes a first ring (Inner gimbal) having first and

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second pairs of holes, on first and second axis, respectively, perpendicular to each other; the ring member having a third pair of holes on the second axis; wherein the first pins pass through a hole in the constraining member and the first pair of holes, to support the first ring on and surrounding the constraining member; second pins passing through the second holes and third holes, to support the ring member on the first member.

Since the swing support mechanisms of Abousabha et al and Terauchi are functionally equivalent, as explicitly taught by Terauchi, and the swing support mechanisms of Terauchi and Van Nostrand's Scientific Encyclopedia are functionally equivalent in the universal joint art; it would have been obvious at the time the invention was made to one having ordinary skill in the art to replace the swing support mechanism of Abousabha et al with a swing support member which includes a first ring having first and second pairs of holes, on first and second axis, respectively, perpendicular to each other; the second ring member having a third pair of holes on the second axis; wherein the first pins pass through a hole in the constraining member and the first pair of holes, to support the first ring on and surrounding the constraining member; second pins passing through the second holes and third holes, to support the ring member on the first member, as taught by Terauchi and Van Nostrand's Scientific Encyclopedia, as a matter of engineering expediency.

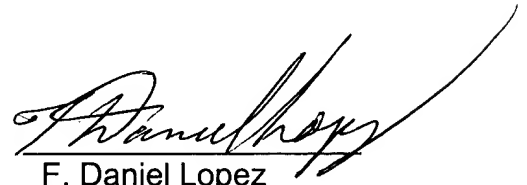
Official notice taken that it is well known to allow a first member to slide in a hole in a second member without rotating, by making the cross section of the first member and the hole is a gear shape or a polygonal shape. It would have been obvious at the time the invention was made to one having ordinary skill in the art to make the constraining member and corresponding shaped hole of Abousabha et al have either a polygonal or a gear cross section, as a matter of engineering expediency.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is (703) 308-0008. The examiner can normally be reached on Monday-Thursday from 6:30 AM -4:00 PM. The examiner can also be reached on alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on (703) 308-1044. The fax number for this group is (703) 872-9302. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0861.

A handwritten signature in black ink, appearing to read "F. Daniel Lopez", with a long, sweeping flourish extending from the end of the signature.

F. Daniel Lopez
Primary Examiner
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November 13, 2003